

Claims

1. A selective wetting material comprising a film on a substrate, the film formed from a two-component plasma reaction in a substantially air-evacuated plasma chamber, a first
5 component of the two-component plasma reaction comprising a non-carbon containing and non-oxygenated silicon donor, and a second component of the two-component plasma reaction comprising a non-silicon containing and non-oxygenated organic precursor, the film having a one or more selective wetting regions formed from the exposure of the one or more selective wetting regions to a radiated electromagnetic energy in the presence of oxygen,
10 whereby a liquid brought into contact with the film selectively wets and adheres to the one or more selective wetting regions of the film.
2. The selective wetting material of claim 1 wherein the second component of the two-component plasma reaction is selected from the group consisting of alkanes, alkenes, alkynes,
15 phenyls and aromatic hydrocarbons.
3. The selective wetting material of claim 1 wherein the second component of the two-component plasma reaction is selected from the group consisting of ethylene, methane, ethane and toluene.
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4. The selective wetting material of claim 1 wherein the first component of the two-component plasma reaction is selected from the group consisting of monosilane, disilane and dichlorsilane.
- 25 5. The selective wetting material of claim 4 wherein the second component of the two-component plasma reaction is selected from the group consisting of ethylene, methane, ethane and toluene.
6. A process for selectively wetting a film on a substrate, the process comprising the steps
30 of:
forming the film on the substrate from a two-component plasma reaction in a

substantially air-evacuated plasma chamber, a first component of the two-component plasma reaction comprising a non-carbon containing and non-oxygenated silicon donor, and a second component of the two-component plasma reaction comprising a non-silicon containing and non-oxygenated organic precursor;

5 patterning the film with a radiated electromagnetic energy through a mask in the presence of oxygen to produce a one or more photo-oxidized regions from exposure to the radiated electromagnetic energy through the mask; and

 contacting the film with a liquid, whereby the liquid selectively wets and adheres to the one or more photo-oxidized regions.

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7. The process of claim 6 wherein the liquid is an electrically conductive material.

8. The process of claim 7 further comprising the step of drying the electrically conductive material adhering to the one or more photo-oxidized regions to form a printed circuit

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9. The process of claim 7 wherein the electrically conductive material is a solution of metal ions and reducing agents.

10. The process of claim 9 wherein the metal ions are silver ions.

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11. The process of claim 6 wherein the liquid is a buffered oxide etch.

12. The process of claim 6 wherein the second component of the two-component plasma reaction is selected from the group consisting of ethylene, methane, ethane and toluene.

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13. The process of claim 6 wherein the first component of the two-component plasma reaction is selected from the group consisting of monosilane, disilane and dichlorsilane.

14. The process of claim 13 wherein the second component of the two-component plasma reaction is selected from the group consisting of ethylene, methane, ethane and toluene.

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15. A process for forming a photomask comprising the steps of:

forming a film on an optically transparent substrate from a two-component plasma reaction in a substantially air-evacuated plasma chamber, a first component of the two-component plasma reaction comprising a non-carbon containing and non-oxygenated silicon donor, and a second component of the two-component plasma reaction comprising a non-silicon containing and non-oxygenated organic precursor;

patterning the film with a radiated electromagnetic energy through a mask in the presence of oxygen to produce a one or more photo-oxidized regions from exposure to the radiated electromagnetic energy through the mask;

contacting the film with a non-transparent liquid, whereby the non-transparent liquid selectively wets and adheres to the one or more photo-oxidized regions;

drying the non-transparent liquid adhering to the one or more photo-oxidized regions to produce a one or more non-transparent regions on the film; and

etching away the film in regions not included in the one or more non-transparent regions to form the photomask.

16. The process of claim **15** wherein the second component of the two-component plasma reaction is selected from the group consisting of alkanes, alkenes, alkynes, phenyls and aromatic hydrocarbons.

17. The process of claim **15** wherein the second component of the two-component plasma reaction is selected from the group consisting of ethylene, methane, ethane and toluene.

18. The process of claim **15** wherein the first component is selected from the group consisting of monosilane, disilane and dichlorsilane.

19. The process of claim **18** wherein the second component is selected from the group consisting of ethylene, methane, ethane and toluene.

20. The process of claim **15** wherein the non-transparent liquid is a metal plating solution.